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A NEW SPECIES OF *CALATHOTARSUS* (ARANEAE: MIGIDAE) FROM CHILE

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Abstract.—*Calathotarsus pihuychen,* a new species from San Antonio Province, Región de Valparaíso (V), Chile, is described and illustrated. Its burrows are described and compared with the burrows of other Chilean Migoidea.

The genus *Calathotarsus* contains two described species, *Calathotarsus coronatus* Simon (1903) from Chile (type species of the genus) and *C. simoni* Schiapelli and Gerschman (1975) from Argentina. Like other Migidae, these spiders close the entrance of their burrow with a trapdoor (Claude-Joseph, 1926, 1930; Schiapelli and Gerschman, 1975). During a recent collecting trip to Chile a new species of *Calathotarsus* was collected. The burrows of this new species were observed and compared with those of the other Chilean trapdoor spiders. Interestingly, the structure of the burrows varies widely, and it is very easy to distinguish the burrows of the four different trapdoor species collected in central Chile. A similar situation was found by Goloboff (1987) for the trapdoor genera in northwestern Argentina.

MATERIALS AND METHODS

Abbreviations used in this study are standard for the Araneae. All measurements are in millimeters.

Leg spines and claw teeth are noted as in Goloboff and Platnick (1987). All specimens are deposited in the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," Buenos Aires.

FAMILY MIGIDAE SIMON

The family Migidae has been traditionally defined by three synapomorphies: cheliceral rastellum absent, thoracic fovea recurved, and cheliceral fangs with lateral keels (Raven, 1985). Goloboff and Platnick (1987) mentioned a fourth synapomorphy of the group: the absence of spigots on the basal article of the PLS. An additional character that seems to support the hypothesis of migid monophyly is the transformation of the spines of leg III (and to a lesser extent those of leg IV) into weaker spiniform setae (Fig. 3). This condition has been mentioned or illustrated in descriptions of migid species (see Legendre and Calderón, 1984; Goloboff and Platnick, 1987; Griswold, 1987a, figs. 14–16, 86, 213, 1987b, figs. 24, 25, 56; Dresco and Canard, 1975, fig. 2), but has not been stressed as a unique character. The successive sister groups of Migidae, the families Actinopodidae, Ctenizidae (Raven, 1985, fig. 256), Idiopidae (Platnick and Shadab, 1976, figs. 9, 11), Cyrtaucheniidae, and Atypoidina and Tuberculotae (except some Theraphosoidina) have numerous and strong

spines on the patella, tibia and metatarsus III. Although some Theraphosoidina (Raven, 1985:37, 1987) have posterior legs with weak or absent spines, the plesiomorphic state for Tuberculotae is clearly the presence of strong (and elongated) spines on the posterior legs (because they are present in the successive sister groups of Theraphosoidina: Nemesiidae, Dipluridae, Hexathelidae, and Mecicobothrioidina).

Calathotarsus pihuychen, new species
Figs. 1–10

Type.—Female holotype (with burrow), Quebrada Córdoba, 5 km E El Tabo, Prov. de San Antonio, Región de Valparaiso (V), Chile, Goloboff, Maury, Szumik coll., Nov. 1988, deposited in the Museo Argentino de Ciencias Naturales.

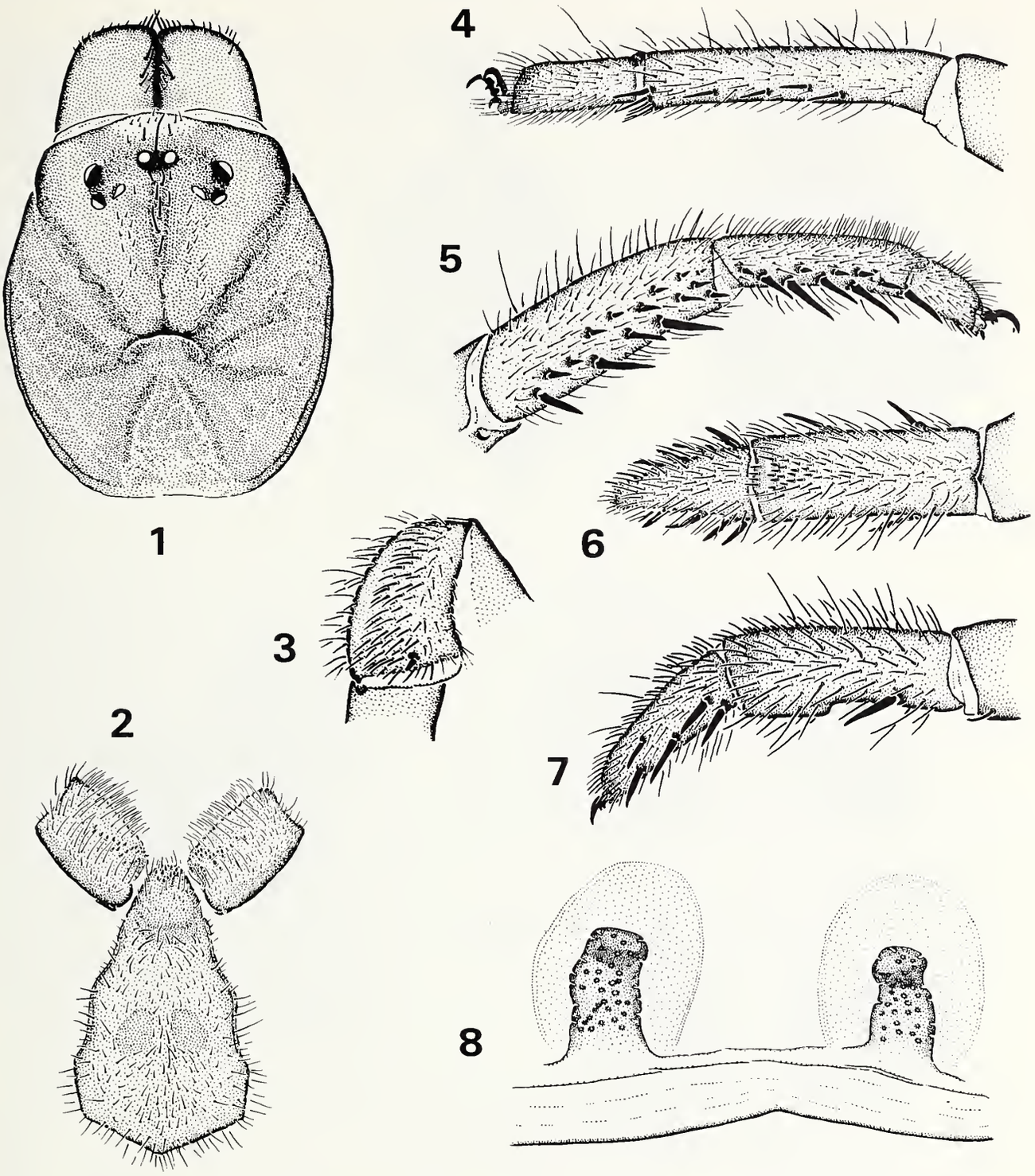
Etymology.—Pihuychén is a mythic Araucanian figure, which hides in the dark to attack people, much the way the migids are thought to capture their prey.

Diagnosis.—Females of *C. pihuychen* differ from females of both previously known species of the genus by the narrower OQ (Fig. 1), the more recurved fovea, the smaller and more numerous cuspules on the labium and palpal coxae (Fig. 2), the normal ITC on leg III, and the weaker and less numerous dorsal apical cusps on the palpal tibia (Fig. 6). The trapdoor of *C. pihuychen* (Figs. 9, 10) is more rounded, the hinge is wider, and the holding pits are smaller and more numerous than in *C. coronatus* (Fig. 11).

Female (Holotype).—Total length, 18.51. Cephalothorax (Fig. 1) 7.23 long, 6.25 wide; head convex, less elevated than in other species of the genus. Clypeus very wide; AER slightly recurved; OQ occupying 0.58 of head width. Chelicerae without rastellum, with 4 teeth on retromargin, 5 on promargin, and 15 denticles in fang furrow; anterodorsal edge of chelicerae with few strong setae forming single row. Cheliceral fangs keeled, without basal outer tooth. Labium 1.16 long, 1.36 wide, with 17 cuspules. Palpal coxae elongate, with 33 cuspules reaching middle of length. Sternum (Fig. 2) 4.53 long, 3.35 wide, separated from labium by suture, only posterior sigilla evident. Leg measurements:

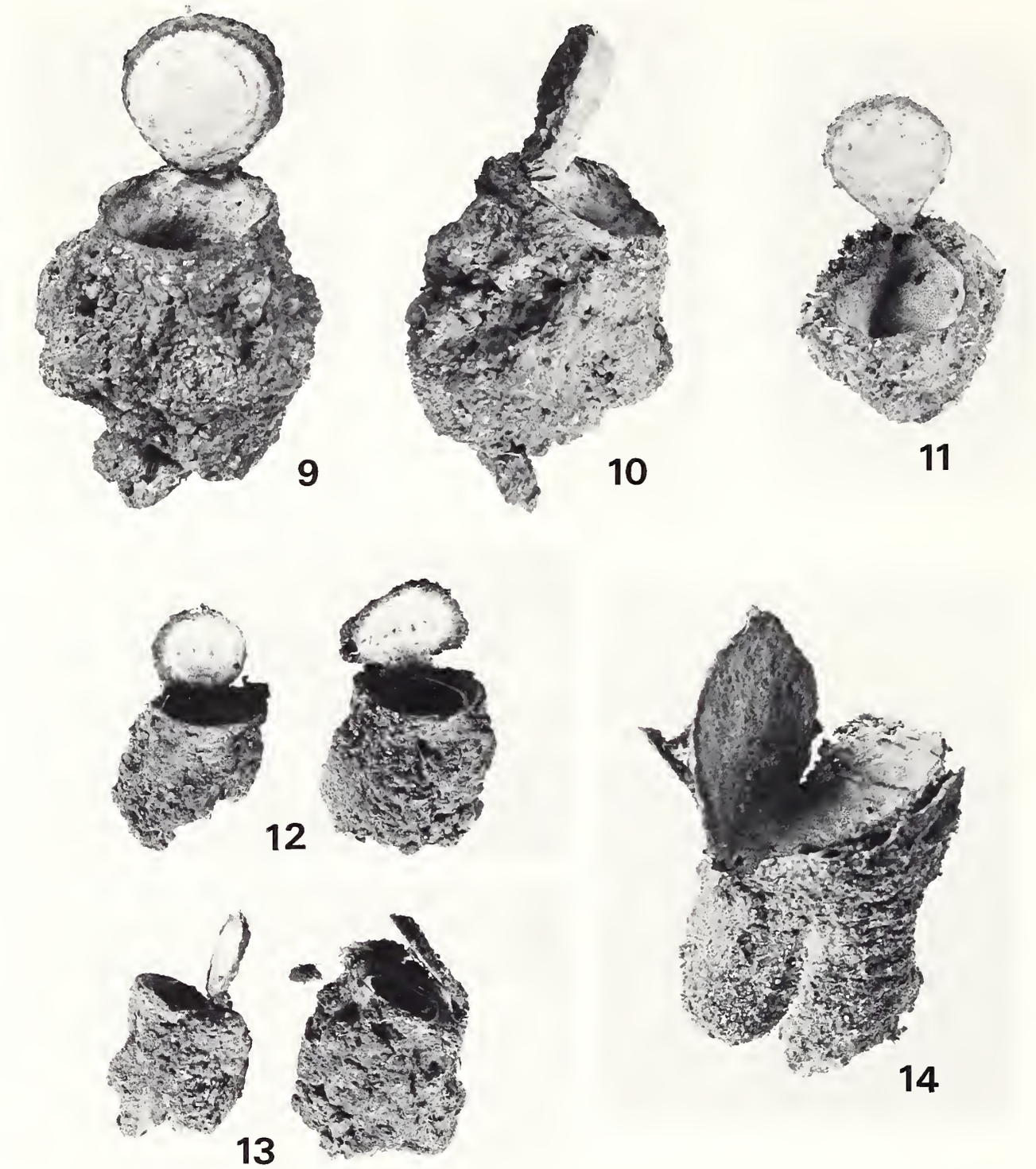
	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	5.20	3.17	3.57	2.68	1.14	15.75
II	4.79	2.84	3.25	2.60	1.14	14.62
III	3.65	2.76	3.17	2.88	1.62	14.09
IV	5.76	3.57	4.22	4.18	1.79	19.53
Palp	3.57	1.91	2.19	—	1.79	9.46

Trichobothria: Tibiae, I, ant 4 (1:3 B), post 3 (1:4 B); II, ant 5 (1:3 B), post 4 (1:4 B); III, ant 7 (4:5 B), post 3 (1:3 B); IV, ant 3 (1:5 B), post 3 (2:5 B); palp, ant 3 (1:2 B), post 0. Metatarsi, I, 10 (1:6 A); II, 13 (1:3 A); III, 12 (2:3 A); IV, 10 (1:2 A). Tarsi, I–III, 17/18 (forming a band); IV, 9 (in a zig zag row); palp, 4 (1:3 M). Spines: all femora without spines. Patellae I and II, 1 R INF A; III, 1 P A; IV, about 50 d ant b; palp, 1-1-1 P (the second longest). Tibiae, I, 8/9 P, 15/18 R INF; II, 7 P, 11/13 R; III, about 35 p sup (1:2 a); IV, 1 v ant a; palp, 1 P (1:3 B), 1-1-1 R, about 20 d (1:4 a). Metatarsi, I, 8 P, 9/11 R INF; II, 9/11 P, 6/8 R INF; III, about 50 d ant, apical comb of 14 (in ventral half); IV, 0-1-1-1-1-1 P INF, apical ventral



Figs. 1–8. *Calathotarsus pihuychen,* female holotype. 1. cephalothorax and chelicerae, dorsal view. 2. sternum and maxillae. 3, patella III, prolateral. 4. metatarsus-tarsus IV, prolateral. 5. tibia-tarsus I, retrolateral. 6. palpal tibia and tarsus, dorsal. 7. palpal tibia and tarsus, prolateral. 8. spermathecae, dorsal.

comb of 17. Tarsi I and II, 0 P, 0 R, about 20 p inf (1:2 a); III and IV, 0; palp, 5/8 P, 4 R. Tibia III not excavated. Spines of anterior legs (Fig. 5) very elongated; third leg (Fig. 3) with many spiniform setae; fourth leg (Fig. 4) with few spines. Palpal tibia with distoventral expansion (Fig. 7) and dorsodistal group of cusps (Fig. 6). STC teeth: I, both claws TT; II, ant d-TT, post TT; III, both claws t-T-T; IV, ant t-T, post t-T-T-T; palpal claw with TT; ITC of tarsus III only slightly smaller than ITC of other legs.



Figs. 9–14. Trapdoors of Chilean Migoidea. 9, 10. *Calathotarsus pihuychen,* female holotypus. 11. *C. coronatus,* from Palmas de Ocoa, Parque Nacional La Campana, Prov. Quillota. 12, 13. *Migas vellardi,* from Playa Agua Dulce, Prov. Choapa. 14, *Plesiolena bonneti,* from Parque Nacional Fray Jorge, Prov. Limari.

PMS with 10 spigots; PLS with ca. 35 spigots (6 of them 3 times larger than the others, grouped on the apex) on apical article, ca. 25 (5 of them 3 times larger than the others, grouped on the apex) on medial article; no spigots on basal article.

Spermathecae short, thick, unbranched (Fig. 8).

Cephalothorax, legs, and chelicerae reddish brown; abdomen uniform gray.

Male.—Unknown.

Habitat.—The female holotype was collected from a burrow (containing an egg-

sac) in a steep ravine bank. This ravine leads into the Córdoba creek; many other empty burrows were found here and also along the main creek banks. The disturbed vegetation growing in the ravine and along the creek was, as usual in this area, denser than further up the banks.

Relationships.—Four characters were mentioned by Goloboff and Platnick (1987) as synapomorphies of *Calathotarsus coronatus* and *C. simoni* (the only species then known): the modified female palpal tibia bearing a distoventral expansion and a rastelliform dorsodistal group of cusps, the wide OQ, the presence of a tumescence on male chelicerae, and the bent male metatarsus I.

The modified female palpal tibia defines the group that also includes *C. pihuychen.* The narrower OQ and the less developed dorsodistal comb in the palpal tibia of *C. pihuychen* suggest that this species is the sister group of *C. coronatus* and *C. simoni.*

The intercheliceral tumescence is more widespread within the family than previously thought. It was considered absent in all migids by Raven (1985), but has been subsequently observed not only in *C. coronatus* and *C. simoni* (Goloboff and Platnick, 1987) but also in some Miginae (*Migas vellardi* Zapfe, 1961 and a specimen in the American Museum of Natural History identified by Griswold, 1987b as *M. variapalpus* Raven, 1984—probably a different species, given that the type of *M. variapalpus* lacks intercheliceral tumescence—Raven, pers. comm.). Tumescence is absent in the genus *Heteromigas* Hogg, 1902 and reportedly absent in the other Rastelloidina, except *Cyclocosmia* (Ctenizidae) and *Cataxia* (Idiopidae). If the intercheliceral tumescence is truly absent in the outgroup of the Migidae, at some level its presence defines a group within the family. The fact that *Calathotarsus* shares with other Miginae this character, absent in *Heteromigas,* suggests that *Calathotarsus* is more closely related to those other migids than to *Heteromigas.* This agrees with Goloboff and Platnick's (1987) hypothesis that the subfamily Calathotarsinae (which includes the genera *Calathotarsus, Heteromigas,* and *Mallecomigas*) is paraphyletic. At present, the level at which the intercheliceral tumescence defines a group within the family cannot be determined, but it is certainly at a higher level than the genus *Calathotarsus.* It should therefore be present in the currently unknown males of *C. pihuychen.*

Another character, the presence of a basal outer tooth in the cheliceral fang, might conflict with the intercheliceral tumescence. The basal outer tooth has been considered a synapomorphy of the subfamily Miginae (Raven, 1984, 1985; Griswold, 1987b), but an apparently homologous structure has been observed in the actinopodid genera *Actinopus, Missulena* (Raven, 1985:143) and *Plesiolena* (Goloboff and Platnick, 1987). Thus it seems equally parsimonious to regard it as a synapomorphy of Migoidea (Actinopodidae + Migidae), with loss in some migids, or as defining both the family Actinopodidae and the subfamily Miginae.

The males of *C. pihuychen* may or may not have a bent metatarsus I; no prediction is possible with regard to this character.

Distribution.—Known only from the type locality.

Material examined.—Only the type specimen.

BURROW STRUCTURE

C. pihuychen lives in burrows closed with a thick and rigid trapdoor (Figs. 9, 10). The rounded door has beveled edges and fits snugly into the burrow mouth. The

outer surface is slightly concave. The inner surface has two submarginal series of several small pits (which presumably mark where the spider inserts its fangs or claws to hold the door shut). The hinge is narrow but firmly articulated. The burrow is about 15 cm deep and 15 mm wide. It has a layer of white silk adhering to the walls.

The other Chilean species of the genus, *C. coronatus,* makes burrows quite similar to those of *C. pihuychen.* The door of this species is also thick and rigid with beveled edges. However, the hinge is much narrower (Fig. 11), and therefore the door is pointed toward the hinge. The holding pits are larger, more widely separated, and less numerous. The burrows of the Argentinian species, *C. simoni,* were succinctly described by Schiapelli and Gerschman (1975) but details of door thickness, hinge form, and holding pits were omitted. No other observations exist of burrows of this species in nature. The door constructed by a specimen (from Sierra de La Ventana, Buenos Aires, Galiano, Scioscia coll.) kept in captivity was of the thick type, rounded, with a hinge similar to that of *C. pihuychen.* The observation of this single door, constructed in a short period of time, is less reliable than observations in nature of several burrows, maintained over long periods by the spider. Nonetheless, it suggests that the very narrow hinge and distinctive shape of the doors of *C. coronatus* are autapomorphies of this species.

Two other migid genera occur in Chile; *Migas* Koch, 1837 and *Mallecomigas* Goloboff and Platnick, 1987. The burrows of *Migas* (Figs. 12, 13) are easily distinguished from those of *Calathotarsus.* The door—although rigid—is thin and without beveled edges. Being slightly larger than the burrow mouth, it lies over it instead of fitting within it. The outer surface of the door is slightly convex, and the inner surface is flat. The hinge is weaker and more loosely articulated than in the *Calathotarsus* species. The inner surface of the door has two mesal holding marks. The doors of *Mallecomigas* remain unknown.

The only other trapdoor spider recorded for Chile is the actinopodid genus *Plesiolena,* whose burrows have been described by Goloboff and Platnick (1987). The door in this genus (Fig. 14) is thin and flexible, actually consisting of a simple rounded prolongation of the thick loose paper-like silk layer that covers the walls of the burrow. The hinge is very wide and no holding marks are visible on its inner surface. The doors constructed by the other South American actinopodid genus, *Actinopus,* are thick and rigid, and have beveled edges and a narrow hinge (Goloboff, 1987; Coyle, Goloboff and Samson, in press). In the Australian genus *Missulena* the burrows are variable, with two (Main, 1956) doors, only one door, or no door at all (with the silk layer extending outside the burrow and collapsing back onto itself) (Raven, pers. comm.).

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